

Title: The extreme case of Magnetars

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Abstract: Magnetars are magnetically powered rotating neutron stars with extreme magnetic fields (over  $10^{14}$  Gauss). They were discovered in the X- and gamma-rays where they predominantly emit their radiation. Very few sources (roughly 18) have been found since their discovery in 1987. NASA's Fermi Gamma-ray Space Telescope was launched June 11, 2009; since then the Fermi Gamma-ray Burst Monitor (GBM) recorded emission from four magnetar sources. Two of these were brand new sources, SGR J0501+4516, discovered with Swift and extensively monitored with Swift and GBM, SGR J0418+5729, discovered with GBM and the Interplanetary Network (IPN). A third was SGR J1550-5418, a source originally classified as an Anomalous X-ray Pulsar (AXP 1E1547.0-5408), but exhibiting a very prolific outburst with over 400 events recorded in January 2009. In my talk I will give a short history of magnetars and describe how this, once relatively esoteric field, has emerged as a link between several astrophysical areas including Gamma-Ray Bursts. Finally, I will describe the exciting new results of Fermi in this field and the current status of our knowledge of the magnetar population properties and magnetic fields.